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09/832,328	04/10/2001	Earl C. Cox	AVI 1006-01US	8810

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THE LAW OFFICE OF JOHN A. GRIECCI  
703 PIER AVE., SUITE B #657  
HERMOSA BEACH, CA 90254

EXAMINER

RAMPURIA, SHARAD K

ART UNIT	PAPER NUMBER
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2683

DATE MAILED: 08/17/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/832,328

Applicant(s)

COX, EARL C.

Examiner

Sharad K. Rampuria

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-20,22,23 and 26-29 is/are pending in the application.
- 4a) Of the above claim(s) 1-5,21,24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-20,22,23 and 26-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7, 10-13, & 16-17, are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. [US 6061562] (hereinafter "Martin") in view of Wiedeman et al. [US 5884142] (hereinafter "Wiedeman")

6. Regarding claim 6, Martin disclosed A method of maintaining a communications link between a ground station and a suborbital platform, wherein the ground station communicates using an antenna that provides a communication signal of limited beamwidth (col.4; 34-48), comprising: positioning the suborbital platform and antenna such that the suborbital platform is within the beamwidth of the antenna's signal; (col.4; 34-48 & col.3; 44-53)

Martin fails to disclosed flying the suborbital platform in a pattern that maintains the suborbital platform within the beamwidth of the signal. However, Wiedeman teaches in an analogous art, that maintaining the antenna in a generally fixed orientation; (col.4; 48-55 & col.6; 41-54) and flying the suborbital platform in a pattern that maintains the suborbital platform within the beamwidth of the signal. (col.4; 25-48) Therefore, it would have been obvious to one

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of ordinary skill in the art at the time of invention to include flying the suborbital platform in a pattern that maintains the suborbital platform within the beamwidth of the signal in order to provide a satellite system having regions that are located within a regional service area.

7. Regarding Claim 7, Martin disclosed The method of claim 6, wherein the airplane is substantially maintained within a geostationary station (col.4; 12-18) delimited by a 4000-foot diameter circle and a 100-foot altitude range. (col.5; 57-65 & col.3; 44-67)

10. Regarding Claim 10, Martin disclosed The method of claim 6, wherein the suborbital platform is an airplane. (12; fig. 1; col.3; 53-67)

11. Regarding claim 11, Martin disclosed A communications system (abstract) for communicating between a satellite and a ground station, comprising:  
a downward-pointing communications antenna on the satellite, the downward-pointing antenna having a limited signal beam-width; (col.4; 34-48 & 200; fig.5; col.9; 4-16)

Martin fails to disclosed a suborbital platform configured to fly a pattern entirely within the delimited region of airspace. However, Wiedeman teaches in an analogous art, that an upward-pointing communications antenna on the ground station, the upward-pointing antenna having a limited signal beam-width, wherein the downward-pointing antenna and the upward-pointing antenna are aimed such that they delimit a geostationary region of airspace that is within both signal beam-widths; (col.4; 48-55 & col.6; 41-54) and a suborbital platform configured to fly a pattern entirely within the delimited region of airspace. (col.4; 25-48) Therefore, it would

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have been obvious to one of ordinary skill in the art at the time of invention to include a suborbital platform configured to fly a pattern entirely within the delimited region of airspace in order to provide a satellite system having regions that are located within a regional service area.

12. Regarding Claim 12, Martin disclosed The communication system of claim 11, wherein the suborbital platform is substantially maintained within a station delimited by a 4000-foot diameter circle and a 100-foot altitude range. (col.5; 57-65 & col.3; 44-67).

13. Regarding claim 13, Martin disclosed A communication system (abstract) comprising; a ground station (22; fig.1) a spacecraft in geosynchronous orbit (34; fig.1), the ground station and the spacecraft having communications systems that are characterized by operating with given beamwidths (col.4; 34-48); and

Martin fails to disclosed prevents the spacecraft from being within the beamwidth of communication signals transmitted by the ground station toward the suborbital platform. However, Wiedeman teaches in an analogous art, that a suborbital platform (30; fig.1) maintained at a non-equatorial latitude that prevents the ground station from being within the beamwidth of communication signals transmitted by the spacecraft toward the suborbital platform, (col.4; 48-55 & col.6; 41-54) and that prevents the spacecraft from being within the beamwidth of communication signals transmitted by the ground station toward the suborbital platform. (col.4; 25-48) wherein the ground station maintains both a direct communications signal and an indirect communications signal with the spacecraft, the indirect communications

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signal being directed to the suborbital platform which relays the signal to the spacecraft; (col.13; 26-35) and

Wherein the direct and the indirect communications signal from the ground station use the same wavelengths. (Ka-band; col.10; 16-28& col.14; 49-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include prevents the spacecraft from being within the beamwidth of communication signals transmitted by the ground station toward the suborbital platform in order to provide a satellite system having regions that are located within a regional service area.

16. Regarding Claim 16, Martin disclosed The communication system of claim 13, wherein the suborbital platform is configured to maintain the airplane within a geostationary station (col.4; 12-18) delimited by a 4000-foot diameter circle and a 100-foot altitude range. (col.5; 57-65 & col.3; 44-67).

17. Regarding claim 17, Martin disclosed A communication apparatus for communicating data between a terrestrial gateway and a plurality of terrestrial terminals (abstract), comprising: an airplane (12; fig.1) flying within a geostationary station (col.4; 12-18); and a network carried by the airplane, and having at least three downward-pointing communication devices (col.3; 54-67), each communication device defining a beamwidth for communication, the communication devices' beamwidths delimiting distinct terrestrial communication cells that include the terminals when the airplane is aloft in a predetermined station;

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wherein the network is configured to maintain a communications signal carrying the data with the gateway; (col.4; 34-60)

wherein the communications devices are configured to route the data carried by the communication signal between the network and the plurality of terminals. (col.4; 34-60 & col.3; 44-67) and

Martin fails to disclosed the terminal antenna being configured such that the airplane's entire flight station falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's aim. However, Wiedeman teaches in an analogous art, that wherein each terminal has a terminal antenna configured for carrying the communication signal, the terminal antenna being configured such that the airplane's entire flight station falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's aim. (col.4; 25-55 & col.6; 41-54) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the terminal antenna being configured such that the airplane's entire flight station falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's aim in order to provide a satellite system having regions that are located within a regional service area.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin & Wiedeman further in view of Knoblach et al. [US 2002/0072361] (hereinafter "Knoblach")

18. Regarding claim 18, The above combination disclosed all the particulars of the claim except the network is configured to maintain additional communications signals carrying additional data

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with additional gateways. However, Knoblach teaches in an analogous art, that The communications system of claim 17, wherein:

the network is configured to maintain additional communications signals carrying additional data with additional gateways; (pg.9; 0063) and

the communications devices are further configured to route the data carried by the additional communication signals between the network and the plurality of terminals. (pg.9; 0063)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the network is configured to maintain additional communications signals carrying additional data with additional gateways in order to provide additional frequencies if available.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin & Wiedeman further in view of Gross. [US 6075483] (hereinafter "Gross")

22. Regarding claim 22, The above combination disclosed all the particulars of the claim except the terminal antenna includes no active tracking mechanism. However, Gross teaches in an analogous art, that The communications system of claim 17, wherein the terminal antenna includes no active tracking mechanism. (col.2; 50- col.3; 14 & col.3; 54-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the terminal antenna includes no active tracking mechanism in order to provide a rapid means of directing a narrow beam antenna to the direction of the desired satellite.



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Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin & Knoblach further in view of Wiedeman.

23. Regarding claim 23, Martin disclosed A communication system for communicating data between one or more gateways and a plurality of terrestrial terminals, each terminal having an antenna characterized by an orientation and a beamwidth, (abstract) comprising:  
a plurality of networks, each airplane carrying a network, each network having at least three downward-pointing communication devices (col.3; 54-67), each communication device defining a beamwidth for communication, the communication devices' beamwidths delimiting distinct terrestrial communication cells that include the terminals when the airplane is aloft in its respective flight station; (col.4; 34-60)  
wherein each network is configured to maintain communications with the one or more gateways; (col.4; 34-60)  
wherein each communications device is configured to route data carried by its respective network's gateway communications between its respective network and one or more of the plurality of terminals. (col.4; 34-60 & col.6; 31-53)

Martin fails to disclosed a plurality of airplanes. However, Knoblach teaches in an analogous art, that a plurality of airplanes including a first airplane and a second airplane, each airplane flying within a flight station; wherein each airplane's respective station is outside of the oriented beamwidths of the terminal antennas that are in communication with other airplanes. (12 a-g; fig.1; pg.6; 0045; lines 1-8). Therefore, it would have been obvious to one of ordinary skill

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in the art at the time of invention to include a plurality of airplanes in order to provide ubiquitous line of sight for coverage of the geographical area.

Martin & Knoblach fails to disclosed one or more of the same communication cells using the same wavelengths. However, Wiedeman teaches in an analogous art, that Wherein the networks of the first airplane and the second airplane are configured to communicate with terminals in one or more of the same communication cells using the same wavelengths. (Ka-band; col.10; 16-28 & col.14; 49-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include one or more of the same communication cells using the same wavelengths in order to provide a satellite system having regions that are located within a regional service area.

Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin, Knoblach & Wiedeman further in view of Gross.

28. Regarding claim 28, The above combination disclosed all the particulars of the claim except the airplane's entire station falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's aim. However, Gross teaches in an analogous art, that The communications system of claim 23, wherein each terminal antenna is configured for carrying the communication signal, the terminal antenna being configured such that the entire station of the airplane, with which it is communication, falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's orientation. (col.2; 50- col.3; 14 & col.3; 54-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention

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to include the airplane's entire station falls within the terminal antenna's beamwidth without any adjustment of the terminal antenna's aim in order to provide a rapid means of directing a narrow beam antenna to the direction of the desired satellite.

29. Regarding claim 29, The above combination disclosed all the particulars of the claim except the terminal antenna includes no active tracking mechanism. However, Gross teaches in an analogous art, that The communications system of claim 28, wherein the terminal antenna includes no active tracking mechanism. (col.2; 50- col.3; 14 & col.3; 54-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the terminal antenna includes no active tracking mechanism in order to provide a rapid means of directing a narrow beam antenna to the direction of the desired satellite.

Claims 8-9, 14-15, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin & Wiedeman further in view of Hibbs et al. [US 5810284] (hereinafter "Hibbs")

8. Regarding Claim 8, The above combination disclosed all the particulars of the claim except the step of flying is continued for at least 200 hours. However, Hibbs teaches in an analogous art, that The method of claim 6, wherein the step of flying is continued for at least 200 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the step of flying is continued for at least 200 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

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9. Regarding Claim 9, The above combination disclosed all the particulars of the claim except the communications device is carried by an airplane configured to stay aloft without refueling for at least 3000 hours. However, Hibbs teaches in an analogous art, that The method of claim 6, wherein the step of flying is continued for at least 3000 hours. (col.6; 61-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the communications device is carried by an airplane configured to stay aloft without refueling for at least 3000 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

14. Regarding Claim 14, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 200 hours. However, Hibbs teaches in an analogous art, that The communication system of claim 13, wherein the suborbital platform is configured to operate for at least 200 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital platform is configured to operate for at least 200 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

15. Regarding Claim 15, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 3000 hours. However, Hibbs teaches in an analogous art, that The communication system of claim 13, wherein the suborbital platform is configured to operate for at least 3000 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital

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platform is configured to operate for at least 3000 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

19. Regarding Claim 19, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 200 hours. However, Hibbs teaches in an analogous art, that The communications system of claim 17, wherein the communications device is carried by an airplane configured to stay aloft without refueling for at least 200 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital platform is configured to operate for at least 200 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

20. Regarding Claim 20, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 3000 hours. However, Hibbs teaches in an analogous art, that The communications system of claim 17, wherein the communications device is carried by an airplane configured to stay aloft without refueling for at least 3000 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital platform is configured to operate for at least 3000 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin, Knoblach & Wiedeman further in view of Hibbs.

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26. Regarding Claim 26, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 200 hours. However, Hibbs teaches in an analogous art, that The communications system of claim 23, wherein each airplane is configured to stay aloft without refueling for at least 200 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital platform is configured to operate for at least 200 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

27. Regarding Claim 27, The above combination disclosed all the particulars of the claim except the suborbital platform is configured to operate for at least 3000 hours. However, Hibbs teaches in an analogous art, that The communications system of claim 23, wherein each airplane is configured to stay aloft without refueling for at least 3000 hours. (col.7; 51-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the suborbital platform is configured to operate for at least 3000 hours in order to provide a solar powered aircraft which can remain aloft indefinitely.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the

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mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharad Rampuria whose telephone number is 703-308-4736. The examiner can normally be reached on Mon-Fri. (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 703-308-5318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Sharad Rampuria  
July 29, 2004

  
WILLIAM TROST  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600